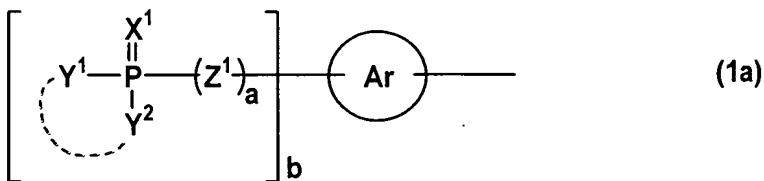


CLAIMS

1. A flame-retardant resin composition, which comprises a base resin (A), an organic phosphorus compound 5 (B), and a flame-retardant auxiliary (C), wherein the organic phosphorus compound (B) comprises a compound having a unit represented by the following formula (1a):



wherein Ar represents an aromatic hydrocarbon ring 10 or a nitrogen-containing aromatic heterocycle; X¹ represents an oxygen atom or a sulfur atom; Y¹ and Y² are the same or different from each other and each represents a hydrocarbon group, an alkoxy group, an aryloxy group, or an aralkyloxy group; Z¹ represents an alkylene group, 15 or a nitrogen-containing bivalent group corresponding to an alkylamine; Y¹ and Y² may bind to each other, and Y¹ and Y² together with the adjacent phosphorus atom may form a ring; "a" denotes 0 or 1; and "b" denotes an integer of 1 to 6.

20 2. A resin composition according to claim 1, wherein the base resin (A) comprises at least one thermoplastic resin selected from the group consisting of a polyester-series resin, a styrenic resin, a polyamide-series resin, a polycarbonate-series resin, a

polyphenylene oxide-series resin, a vinyl-series resin, an olefinic resin, and an acrylic resin.

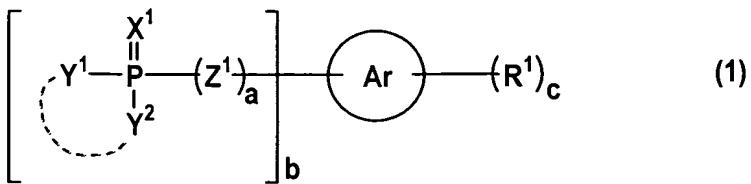
3. A resin composition according to claim 1,  
wherein the base resin (A) comprises a styrenic resin and  
5 at least one member selected from the group consisting of  
a polyester-series resin, a polyamide-series resin, a  
polycarbonate-series resin, and a polyphenylene  
oxide-series resin.

4. A resin composition according to claim 1,  
10 wherein the base resin (A) comprises a polyester-series  
resin, or at least a polyester-series resin and a styrenic  
resin.

5. A resin composition according to claim 1,  
wherein the polyester-series resin comprises a homo- or  
15 co-polyester having at least one unit selected from the  
group consisting of 1,4-cyclohexanedimethylene  
terephthalate, a C<sub>2</sub>-4alkylene terephthalate, and a C<sub>2</sub>-4  
alkylene naphthalate.

6. A resin composition according to claim 1,  
20 wherein the polyester-series resin comprises a homo- or  
co-polyester having at least one unit selected from the  
group consisting of ethylene terephthalate, trimethylene  
terephthalate, and butylene terephthalate.

7. A resin composition according to claim 1,  
25 wherein the organic phosphorus compound (B) comprises a  
compound represented by the following formula (1):



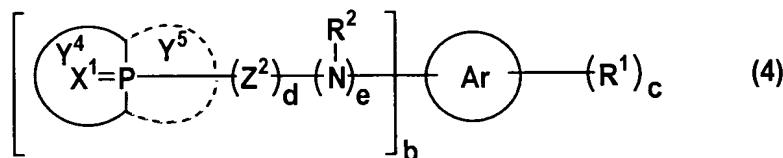
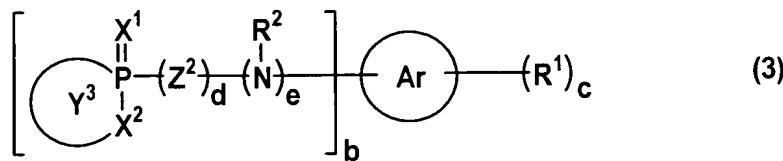
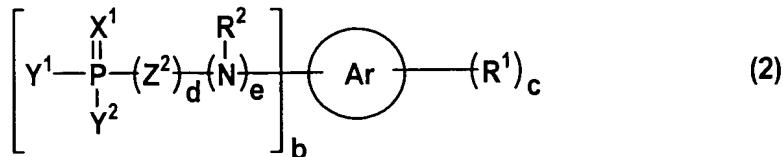
wherein  $R^1$  represents an organic group; "c" denotes an integer of 0 to 9; and Ar,  $X^1$ ,  $Y^1$ ,  $Y^2$ ,  $Z^1$ , "a" and "b" have the same meanings as defined above.

8. A resin composition according to claim 7, wherein, in the formula (1),  $R^1$  is at least one organic group selected from the group consisting of a hydrocarbon group, an N-substituted amino group, an amino group-containing hydrocarbon group, a hydroxyl group, and a substituted hydroxyl group; the ring Ar is a  $C_{6-20}$ aromatic hydrocarbon ring or a 6 to 20-membered aromatic heterocycle having 1 to 4 nitrogen atom(s) as a ring-constituting atom; a hydrocarbon group represented by  $Y^1$  and  $Y^2$  is an alkyl group, a cycloalkyl group, an aryl group, or an aralkyl group; and a ring formed by  $Y^1$  and  $Y^2$  with the adjacent phosphorus atom is a 4 to 20-membered heterocycle having a phosphorus atom as a ring-constituting hetero atom.

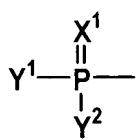
9. A resin composition according to claim 7, wherein, in the formula (1),  $R^1$  is a hydroxyl group or a substituted hydroxyl group, "c" is 2, and the ring Ar is a  $C_{6-12}$ aromatic hydrocarbon ring.

10. A resin composition according to claim 1, wherein the organic phosphorus compound (B) comprises at

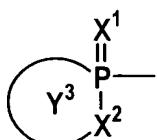
least one member selected from the group consisting of compounds represented by the following formulae (2) to (4):



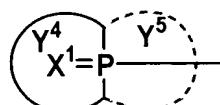
wherein  $X^2$  represents an oxygen atom or a sulfur atom;  $Y^3$  represents a 5 to 10-membered ring which contains  $P$  and  $X^2$  as ring-constituting atoms and may have a substituent;  $Y^4$  and  $Y^5$  are the same or different from each other and each represents a 4 to 10-membered ring which contains  $P$  as a ring-constituting atom and may have a substituent;  $Z^2$  represents an alkylene group;  $R^1$  represents an organic group;  $R^2$  represents a hydrogen atom, an alkyl group, or a group represented by the following formula (2a), (3a) or (4a):



(2a)



(3a)

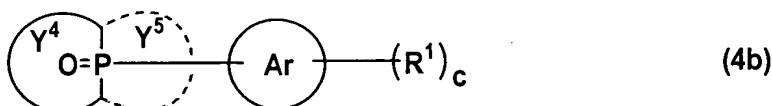
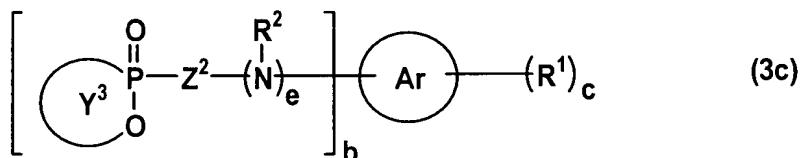
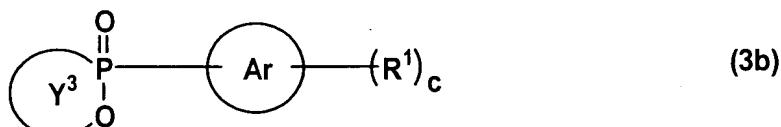
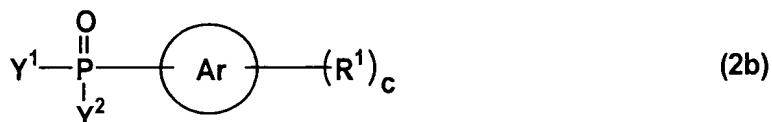


(4a)

wherein  $X^1$ ,  $X^2$ ,  $Y^1$ ,  $Y^2$ ,  $Y^3$ ,  $Y^4$  and  $Y^5$  have the same meanings defined above;

"c" represents an integer of 0 to 9; "d" and "e" are the same or different from each other and each represents 0 or 1, provided that "d" is 1 when "e" is 1; and R<sup>1</sup>, Ar, X<sup>1</sup>, Y<sup>1</sup>, Y<sup>2</sup>, "a", "b" and "c" have the same meanings as defined above.

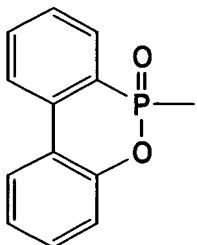
11. A resin composition according to claim 10, wherein the organic phosphorus compound (B) comprises at least one member selected from the group consisting of compounds represented by the following formulae (2b), (3b), (3c) and (4b):



wherein R<sup>1</sup>, R<sup>2</sup>, Ar, Y<sup>1</sup>, Y<sup>2</sup>, Y<sup>3</sup>, Y<sup>4</sup>, Y<sup>5</sup>, Z<sup>2</sup>, "b", "c" and "e" have the same meanings as defined above.

12. A resin composition according to claim 10, wherein, in the formulae (3) and (3a), the phosphorus-containing group formed by the ring Y<sup>3</sup>, X<sup>1</sup> and

X<sup>2</sup> is a group represented by the following formula which may have an organic substituent on an aromatic ring.



13. A resin composition according to claim 1,  
5 wherein the organic phosphorus compound (B) comprises at least one member selected from the group consisting of a diarylphosphonyl-polyhydroxyarene, a dialkylphosphonyl-polyhydroxyarene, a 10-(polyhydroxyaryl)-10H-9-oxa-10-phosphaphenanthlene-  
10 10-oxide, and a cycloalkylenephosphonyl-polyhydroxyarene.

14. A resin composition according to claim 1,  
wherein the organic phosphorus compound (B) comprises at least one member selected from the group consisting of a mono- or  
15 bis[(9,10-dihydro-9-oxa-10-oxide-10-phosphaphenanthlen-  
-10-yl)C<sub>1-4</sub>alkyl]benzene, an N-mono- or N,N-bis[(9,10-dihydro-9-oxa-10-oxide-10-phosphaphenant-  
hlen-10-yl)C<sub>1-4</sub>alkyl]aminotriazine, a mono- or bis[(cycloalkylenephosphonyl)C<sub>1-4</sub>alkyl]benzene, and an  
20 N-mono- or N,N-bis[(cycloalkylenephosphonyl)C<sub>1-4</sub>alkyl]aminotriazine.

15. A resin composition according to claim 1,

wherein the organic phosphorus compound (B) comprises an oligomer or polymer obtainable from a compound of the formula (1) recited in claim 7 and a dicarboxylic acid component containing at least an aromatic dicarboxylic acid, wherein,  
5 in the formula (1), R<sup>1</sup> is a hydroxyl group or a derivative group thereof capable of forming an ester and "c" is not less than 2.

16. A resin composition according to claim 1, wherein the flame-retardant auxiliary (C) comprises at least  
10 one member selected from the group consisting of  
(C1) a phosphorus-containing compound,  
(C2) an aromatic resin,  
(C3) a nitrogen-containing cyclic compound having no phosphorus atom, or a salt thereof,  
15 (C4) an inorganic metal compound,  
(C5) a sulfur-containing compound, and  
(C6) a silicon-containing compound,  
wherein the phosphorus-containing compound (C1) is selected from the group consisting of (c-1) an inorganic phosphorus compound, (c-2) an orthophosphoric ester or a condensate thereof, (c-3) a phosphoric acid ester amide, (c-4) a phosphonitrilic compound, (c-5) a phosphorous ester having a phosphonyl group or a phosphinico group, or a metal salt thereof, and (c-6) an organic hypophosphorous acid compound  
20 having a phosphonyl group or a phosphinico group, or a metal salt thereof,  
25 having a phosphonyl group or a phosphinico group, or a metal salt thereof.

17. A resin composition according to claim 16,

- wherein the aromatic resin (C2) comprises at least one member selected from the group consisting of
- a polyphenylene sulfide-series resin,
  - a polyphenylene oxide-series resin,
  - 5 a polycarbonate-series resin,
  - an aromatic nylon,
  - a polyarylate-series resin,
  - an aromatic epoxy resin, and
  - a resin of which the main chain or side chain contains
  - 10 an aromatic ring having a hydroxyl group, an amino group, or both.
18. A resin composition according to claim 16, wherein the cyclic compound or a salt thereof (C3) comprises at least one member selected from the group consisting of
- 15 a nitrogen-containing cyclic compound having an amino group, or a salt thereof,
  - a cyclic compound having a urea unit,
  - a tetrazole compound, and
  - a (poly)phosphoric amide.
19. A resin composition according claim 16, wherein the inorganic metal compound (C4) comprises at least one member selected from the group consisting of a metal hydroxide, a metal borate, a metal hydrogenphosphate, and a metal stannate.
20. A resin composition according claim 16, wherein the sulfur-containing compound (C5) comprises at least one member selected from salts of a metal with an

organic sulfonic acid.

21. A resin composition according to claim 16, wherein the silicon-containing compound (C6) comprises at least one member selected from the group consisting of a linear or branched organosiloxane, and a zeolite.

22. A resin composition according to claim 1, wherein the total amount of the organic phosphorus compound (B) and the flame-retardant auxiliary (C) is 0.01 to 300 parts by weight relative to 100 parts by weight of the base resin (A), and the proportion of the organic phosphorus compound (B) relative to the flame-retardant auxiliary (C) [the former/the latter] is 5/100 to 1000/100.

23. A resin composition according to claim 1, which further comprises at least one member selected from the group consisting of a hindered phenol-series antioxidant, a phosphorus-containing stabilizer, a fluorine-containing resin, and a filler.

24. A process for producing a flame-retardant resin composition, which comprises mixing a base resin (A), an organic phosphorus compound (B) recited in claim 1 and a flame-retardant auxiliary (C).

25. A shaped article which is formed with a flame-retardant resin composition recited in claim 1.

26. A shaped article according to claim 25, which is an electric or electronic device part, an office automation device part, a household electrical appliance part, an automotive part, or a mechanical part or machine

element.